

Release Notes

ATTENTION all previous version customers!

Version 7 is a \$39 paid upgrade, and requires a new serial number if you are upgrading from versions 4 or 5. Version 6 users will retain the same serial number when upgrading to version 7. Versions 1, 2, and 3 are not eligible for upgrade pricing due to age.

If you install version 7 without purchasing a new serial number, your videos exported from ScreenFlow 7 will contain a watermark until you have entered a valid version 7 serial.

To obtain the \$39 upgrade price for version 4, 5, or 6, your serial number must be activated in the ScreenFlow Preferences> License panel of the older version, before initiating the upgrade process. Failure to ensure your older version is activated before installing a newer version, will result in upgrade pricing not being offered.

Not seeing upgrade pricing when you should? Here are your options:

1. If you are able, reinstall the older version 4, 5, or 6 that matches your serial. Activate the serial number in the Licensing panel of the ScreenFlow Preferences, then upgrade to version 7. Upgrade pricing should now be offered.
2. If you are unable to activate your v4, v5, or v6 license on your mac before installing version 7, you may [contact our sales team](#) to obtain upgrade pricing.

Mac App Store Customers:

Unfortunately, the Mac App Store does not allow for product upgrades. If you missed the launch day pricing, you have three options:

1. You can purchase ScreenFlow 7 from the Mac App Store at full price. This option would allow you to run ScreenFlow on as many devices as the Mac App Store allows.
2. You may [contact our sales team](#) to obtain upgrade pricing. This will require that you transfer your license to a Telestream license and upgrade to ScreenFlow 7 for \$39.00 and run it on one device per the Telestream EULA.
3. If you are running Mac App Store ScreenFlow version 5 and it is no longer operational, you can transfer your license to a Telestream license and you will be issued a complimentary version 5.0.7 serial number which will operate on macOS 10.12 Sierra
4. If you are running Mac App Store ScreenFlow version 6 and it is no longer operational, you can transfer your license to a Telestream license and you will be issued a complimentary version 6.2.4 serial number which will operate on macOS 10.13 High Sierra.

[Differences between Telestream version and Mac App Store version](#)

System Requirements

- Intel-based¹ Mac² with 64-bit processor – Core i3+ recommended
- Operating Systems
 - Mac OSX 10.11 El Capitan, macOS 10.12 Sierra & macOS 10.13 High Sierra
- Minimum 2 GB RAM
- 20 GB hard drive
- Apple macOS approved graphics card^{3,4} required
- Cameras using the DV and/or HDV codec are not supported. [Click here to learn more.](#)

¹Intel GMA chips are unable to support Motion Blur and some Callout features

²ScreenFlow does not support “Hackintosh” systems

³ScreenFlow requires a GPU officially supported by Apple

⁴ScreenFlow does not support NVIDIA “Web Drivers”

7.3.1 – Changes

Improvements:

- **IMPROVED-** [ScreenFlow Audio Driver KB article](#): Explain the different workflows and issues customers might experience with the new audio driver.
- **IMPROVED-** Add alert to perform test recording when recording system audio.
- **IMPROVED-** Notify when certain "known" apps are running but not using the audio driver when recording system audio.
- **IMPROVED-** [ScreenFlow ZOOM Recordings article](#): Editing of MP4 files created in Zoom.US meeting software with ScreenFlow exhibits issues due to file GOP Size being abnormally large.
- **IMPROVED-** ScreenFlow Helper should always forward audio to default audio output.
- **IMPROVED-** Track opening, saving, and writing to files within Diagnostics for improved ability to help users who request support.
- **IMPROVED-** Update audio driver to run in the background at app level to be used for audio capture
- **IMPROVED-** Upgrade the HAL audio driver to the newest version

Fixes:

- **FIXED*** -After recording Bluetooth headset Mic, Headset doesn't hear audio when playing.
 - macOS will sometimes not switch back as expected, requiring a reboot.
 - This is not specific to ScreenFlow - Apple Radar Bug: 40503482
- **FIXED** - Audio stream hijacked from my DAW software
- **FIXED** - Captions help menu cut off
- **FIXED** - Partial Screen Recording of Retina displays single pixel discoloration on bottom and right sides
- **FIXED** - Recording Bluetooth audio will come in as "Helicopter" sounding audio after making a first initial recording.

7.3 – Changes

Improvements:

- **IMPROVED** – Completely re-written audio driver
 - New Apple computers such as the iMac Pro utilize different methods of playing audio to the internal speakers. This made the legacy audio capture method unable to capture system audio playback. Our new audio driver restores this functionality on the new iMac Pro.
- **IMPROVED** - Add a modifier key to add media either in sequence or layered when adding from the Media Library to the timeline
- **IMPROVED** - Option for do not show message with regard to "unable to split beginning or end of a clip"

Fixes:

- **FIXED** - Able to scroll far past available transitions in Transition Inspector with Show scroll bars 'When scrolling' General preference
- **FIXED** - Abnormal Audio Problem When Recording With MAS version ScreenFlow
- **FIXED** - Animated Touch Callout Actions stop working
- **FIXED** - Audio driver never installs - added prompt to instruct user to press Allow in "Security and Preferences"
- **FIXED** - Audio goes out of sync when background sounds occur during a recording
- **FIXED** - Bad file descriptor exception when saving a document with media imported from a disconnected drive
- **FIXED** - Can't Import FabFilter AU
- **FIXED** - Canvas resize issue with External Monitors
- **FIXED** - Clear In & Out Points not localized in right-click context menu
- **FIXED** - Clip duration shows incorrectly in clip inspector and causes issues with timeline zoom on a 60 FPS timeline
- **FIXED** - Data loss can occur in rare circumstances if a recording file is copied from one document to another and ScreenFlow crashes
- **FIXED** - Dynamic updates are not detected automatically, require ScreenFlow restart
- **FIXED** - Exporting with AppleTV preset causes crash
- **FIXED** - File duration does not get updated when replacing a file within the Global Library
- **FIXED** - Incorrect tool tip for "Reposition scrubber after pasting"
- **FIXED** - Internal Recording error when using Bluetooth as sound output
- **FIXED** - Play Caption Track not localized in Shortcuts tab
- **FIXED** - Recover message in rare situations does not display correctly when launching ScreenFlow after the app closes/quits unexpectedly
- **FIXED** - Renamed file in Global Library will not show name correctly when adding file to the timeline
- **FIXED** - Save copy to disk for Image points to the user folder instead of movies folder
- **FIXED** - Touch callout "interpolated state" shows on export if callout is selected in clip
- **FIXED** - Unable to record audio on new iMac Pro - Fixed by new audio driver design
- **FIXED** - Unable to save when pasting a recording from a 60 FPS document to a 30 FPS document

7.2 – Changes

Improvements:

- **IMPROVED** - Ability to maintain aspect ratio via a modifier when resizing partial screen capture
- **IMPROVED** - Add 'Clear In & Out Points' to right click menu when clicking a selected region
- **IMPROVED** - Added Mix to Mono hotkey
- **IMPROVED** - Display Google Drive directory
- **IMPROVED** - Display length in milliseconds in selected range of a clip.
- **IMPROVED** - Focus the Media Library when a new document is opened
- **IMPROVED** - Improve error message when attempting to activate an older version serial number
- **IMPROVED** - Keyboard shortcut to play caption track
- **IMPROVED** - Option to scale canvas size to maintain aspect ratio using the shift key
- **IMPROVED** - Upgrade Facebook API
- **IMPROVED** - Upgrade Vimeo API

Fixes:

- **FIXED** - 7.1: Single GOP video files can cause ScreenFlow to hang on import
- **FIXED** - After doing a crop the contextual undo/redo will be for 'scale'
- **FIXED** - Automatic Export type does not support small resolutions
- **FIXED** - Changing name of Global Library files revert back to original names when project is reopened
- **FIXED** - Ensure the microphone selection drop down mirrors the microphone names in system preferences
- **FIXED** - Error when saving project with mp3 files created in Garage Band
- **FIXED** - Export customization window is expandable and shouldn't be
- **FIXED** - Freeze Frame can overlap other clips on timeline
- **FIXED** - Global Recording shortcuts do not update when changing Keyboard Shortcut Sets
- **FIXED** - Overlapping Video on Timeline causing beach-balling and loss of audio
- **FIXED** - Partial Screen Capture can be set larger than actual screen resolution
- **FIXED** - Playback and editing Issues with High Sierra and NVIDIA graphics cards
- **FIXED** - Publish to YouTube categories are not localized
- **FIXED** - Rare crash that can occur when merging clips
- **FIXED** - ScreenFlow not able to import image files when Spotlight is turned off.
- **FIXED** - Some input boxes do not recognize a number as valid unless followed by "%"
- **FIXED** - Splitting a nested clip removes transitions within the nested clip
- **FIXED** - UI does not remember previous window configuration.
- **FIXED** - When accessing folder data is Google Drive, the folder list is capped at 100, and the results are unordered
- **FIXED** - YouTube return URL should contain HTTPS to match YouTube
- **FIXED** - Unable to export chapters markers when markers are unnamed - Now named by default

7.1.1 – Changes

Fixes:

- **FIXED** - 7.1: Single GOP video files can cause ScreenFlow to hang.
- **FIXED** – 10.13 High Sierra: NVIDIA GPU driver issue can cause the canvas and exported video to show black frames, or display other video corruption.
 - **ATTENTION:** The color correction filter will automatically be disabled on NVIDIA GPU systems running 10.13. This is a temporary workaround for this issue until Apple/NVIDIA releases a fix.

7.1 – Changes

Improvements:

- **IMPROVED** - Updated canvas to show color change when using the color picker
- **IMPROVED** - Crash when a login item is invalid
- **IMPROVED** - Allow ScreenFlow to export H.265/HEVC files with macOS 10.13 implementation of HEVC

Fixes:

- **FIXED** - Unable to tab through Audio Mix input boxes after deselecting then reselecting clip
- **FIXED** - Text cursor flashing when recorded by ScreenFlow on macOS Sierra
- **FIXED** - ScreenFlow 7 can crash after importing '.apcn'/' .apch'/' .apcs' media files
- **FIXED** - Pause hotkey is not disabled when the user is not recording
- **FIXED** - No way to remove unlicensed audio plug-ins
- **FIXED** - Nine Part Tiled Filter: Flip Y Tiles slider stuck at zero - It is now a checkbox rather than a value field
- **FIXED** - MP4 Files created with Viddyoze cannot be seen in the timeline
- **FIXED** - macOS 10.13: Partial Screen Capture guidelines do not render at the default resolution
- **FIXED** - macOS 10.13: Installer text hard to read - Improved look of dmg and installation window
- **FIXED** - iOS recordings have incorrect durations when recorded on macOS 10.13
- **FIXED** - Global Recording shortcuts do not update when changing Keyboard Shortcut Sets
- **FIXED** - Export window highlights the extension of the exported file name.
- **FIXED** - Certain mono AAC sources causing playback issues in timeline
- **FIXED** - Canvas Undo button does not revert color change
- **FIXED** - Black frames and missing audio in exported file
- **FIXED** - Batch Export: Sorting incorrect when using projects with numbers in the title
- **FIXED** - Automatic exports sometimes show the 'Maximum File Size' text
- **FIXED** - Apple Animation MOV's not playing in ScreenFlow 7
- **FIXED** - Annotations: Changing default settings will cause the first drawn annotation to be incorrect
- **FIXED** - Annotations can use a previously set default that shouldn't apply to it
- **FIXED** - 7.x: Runtime Error occurs when clearing the Width/Height of a Custom Export Resolution
- **FIXED** - 7.0: iZotope Ozone 7 audio plug-in displays incorrectly, adjusting properties in custom UI causes hang
- **FIXED** - 4:3 Camera Aspect Ratio affected by Recording Monitor

Removed:

- **REMOVED** – Video Filters 'Color Cubes Mixed with Mask' & 'Color Curves' - Crash
 - Crash is non-trivial to fix, and outside the scope of 7.1 maintenance release for macOS 10.13

7.0 - New Features

What's New:

- **MP4 performance improvements** - Easily power through large mp4 file editing. We added significant performance improvements for mp4 files that had previously been slow to process when editing and exporting.
- **Text Animations** - Add animated text effects to your videos, allowing for fun and/or creative polish in your videos. Tweak the default options to create completely new text animations!
- **Global media library** - Now you can store frequently used assets in your Global Library. Every document you open will show those same assets under the Global Library icon! Perfect for workflows that use the same intro/outro graphics for each video, or any other workflow that reuses the same assets frequently.
- **Easy Auto-Export options** - Our new auto export options make videos incredibly easy! Gone are the days of relying on canned presets if you are not an encoding wizard. ScreenFlow 7 lets you select between higher quality or quicker exports and automatically picks the best settings for your project. Need exacting control? We still have our manual modes too, which can be saved as custom export presets.
- **Set clips to play in reverse on the timeline** - Now in ScreenFlow, you can easily set clips to play in reverse.
- **OLED Touch Bar support (MacBook Pro Late 2016) for Timeline Navigation** - ScreenFlow 7 will show the timeline in the new TouchBar equipped Macs. You can use the touchbar to adjust the visible sections of the timeline.
- **macOS AutoSave functionality has been turned off** - ScreenFlow has its own document recovery system and when combined with the AutoSave functionality native to macOS, conflicts could arise in specific situations. Projects could easily become corrupted when saved to remote locations such as network drives or cloud storage solutions, or when transferring files between projects. The combination of both recovery systems also could use excessive storage space in certain instances. Now that there are no longer two recovery systems in competition with each other, these potential issues no longer occur.
- **Intel Quick Sync Hardware Accelerated Encoding** - ScreenFlow 7 can now take advantage of hardware accelerated encoding. This is great for videos where the highest possible quality is not the main goal, and you would like the export process to have a minimal impact on system resources.
- **Implement Multi-Pass x264 Encoding** - Multi-pass x264 encoding can improve quality of exports when compared with single-pass. Now, ScreenFlow will use this automatically if you select a higher quality option from the new auto-export options.

- **Add a Waveform Progress UI to show progress of waveform processing** - When adding files containing audio, or applying certain audio filters, audio waveform rendering can take a lengthy amount of time to complete. Now, ScreenFlow 7 will keep you informed that it is performing an intensive process in the background, and when it is completed. This is particularly useful, as it makes the user aware that editing during render times may be slower until render completion.
- **Add support for higher timeline frame rates** - In ScreenFlow 7, you can now edit in 60 fps. The timeline shows an fps indicator, and you can easily toggle between 30 or 60 fps modes.
- **User defined shortcut keys** - We have added a shortcut manager in ScreenFlow 7. Users can add new shortcut keys to commands that did not previously have a shortcut assigned to it, or change existing shortcuts. You can even have different shortcut sets that can be changed on the fly!
- **Calculate exported file size** - In the export window, ScreenFlow will now provide a estimated filesize. Please keep in mind, this is just an estimation. The resulting file sizes will vary. In our testing, it has been consistently close in its estimation.
- **Enhanced Motion Blur** - In the export dialog, you can now choose between Light, Medium, and Heavy for motion blur effect strength.
- **Custom interfaces for Apple Audio Units (AU)** - Apple audio units that have a UI can now have the UI launched from within ScreenFlow.
- **Made the Timeline and Inspector panels collapsible** - Preview mode has been removed, and we have added a shortcut key to collapse the timeline and inspector.
- **Kern - Tighten/Loosen UI buttons** - There are now buttons in the text inspector for tightening and loosening the kerning values.
- **Add media to Timeline in sequence** - When adding multiple assets to the timeline, ScreenFlow will now place them in sequential order, rather than in separate tracks.
- **Panning and Gain/Volume controls for audio input devices** - In the recording window, there are now Panning and Gain/Volume controls for audio devices. This is great for dialing in more complex, multi-channel workflows before the recording begins, saving time by removing the need to apply repetitious edits to each channel after each recording.
- **Publish to Imgur** - ScreenFlow 7 will allow you to quickly and easily publish directly to Imgur, perfect for gif files. No need to export, visit the upload page, find your file, and submit. Just select Imgur from the ScreenFlow publish menu!
- **Publish to Box.com** - ScreenFlow 7 enables users to quickly and easily publish videos directly to their box.com account, without having to visit box.com to upload your exports.
- **Spanish Language Version** - ScreenFlow 7.0 now supports spanish system localization.
- **Ability to solo multiple audio channels at a time using the Command key (⌘)** - Similar to professional DAW software, ScreenFlow 7 will allow you to use the audio solo function, on more than a single source at a time.

- **Dark UI Theme** - We have added a new “Dark” theme, and set it to default to help make your content stand out for an improved editing experience. Users can switch back to the previous “Light” theme within ScreenFlow preferences.
- **Enable Letterbox by default on exports** - Now, letterboxing will be applied by default if the export aspect ratio differs from the canvas aspect ratio.
- **When adding a new text clip, it should automatically focus it for editing** - ScreenFlow 7 will now automatically jump to the added clip.
- **Support trackpad two finger gesture for media rotation on canvas** - You can now rotate media assets using the relevant two-finger gesture on your Apple touchpad.
- **Shortcuts: Allow user to Import/Export Shortcut Key Sets** - You can now Import & Export shortcut key sets, perfect for multi-user machines, to maintain multiple workflows, or just being able to backup your custom shortcut key settings.
- **Record retina-class cursor** - ScreenFlow will now record high-resolution cursors for improved quality.
- **Added a configurable keyboard shortcuts for** - hiding desktop icons, select "All Clips after Current Clip", select all clips under scrubber (S), Show Quick Media Library, and Partial Screen Recording.

7.0 - Improvements & Fixes

Improvements:

- **IMPROVED** - Add a Video Tutorials button the Frontend Welcome window
- **IMPROVED** - Add click effect/UI color change for jump to beginning/end buttons when clicked
- **IMPROVED** - Add click effect/UI color change to Edit Canvas button when selected/deselected
- **IMPROVED** - Add configurable global keyboard shortcut for Configure Recording from the ScreenFlow helper
- **IMPROVED** - Add Media Library Tooltips
- **IMPROVED** - Add legacySF6 text system toggle
- **IMPROVED** - Add text to Lossless recording compression to explain that the setting will create a larger file size
- **IMPROVED** - Additional recording should default to "Add to current Document" in Recording Complete dialog
- **IMPROVED** - Arrow Keys (L/R) now always frame-step unless an object is selected
- **IMPROVED** - Assign a keyboard shortcut to a template action
- **IMPROVED** - Auto-Select objects pasted in Timeline
- **IMPROVED** - Change Automatic recording frame rate option to show as Highest for better clarification
- **IMPROVED** - Change the tooltips for Jump to Beginning/End buttons
- **IMPROVED** - Display Font preview for Show Keystrokes Font

- **IMPROVED** - Display Timeline frame rate on the timeline status bar
- **IMPROVED** - Ability to Edit Speech Clip after it has been created
- **IMPROVED** - Rewrote Canvas resolution error message for clarification
- **IMPROVED** - Improve naming scheme for additional screen recordings
- **IMPROVED** - Improve post recording dialog box
- **IMPROVED** - Include tooltip for Headphones icon audio monitor mute
- **IMPROVED** - Insert Speech Clip improvements
- **IMPROVED** - Leave the scrubber position alone when copy pasting or during any other editing done on the timeline
- **IMPROVED** - Make exporting audio only (m4a) more user friendly
- **IMPROVED** - Menu item and keyboard shortcut to remove unused media
- **IMPROVED** - New Recording window: Rename iOS recording checkbox
- **IMPROVED** - Brought back the ability to 'Set Mix to Mono'
- **IMPROVED** - Publish to Vimeo: Added 2k/4k option
- **IMPROVED** - Remove internal documentation to allow updates to be done through HTML only
- **IMPROVED** - Set 1920x1080 to be export default resolution
- **IMPROVED** - Typewriter action
- **IMPROVED** - Update Web High and Web Low export presets
- **IMPROVED** - Updated Jump to start/end of timeline icons to better represent functionality
- **IMPROVED** - Use a lighter gray for the Light Theme when viewing the Media Library

Fixes:

- **FIXED** - Audio clips forget their pan settings
- **FIXED** - Audio not being muted when disabling audio tracks on layers below layer 3
- **FIXED** - Audio panning dial changes undo incrementally
- **FIXED** - Audio preview headphones icon is difficult to see when disabled
- **FIXED** - Canceling Export resulting in partially exported MP4.
- **FIXED** - Cannot move timeline scrubber after opening a version 4 document in version 6 software.
- **FIXED** - Cannot record after multiple recording attempts
- **FIXED** - Cannot use shortcut to start partial screen recording
- **FIXED** - Color Controls add black bar border around video on canvas
- **FIXED** - Color saturation changes when a callout is enabled

- **FIXED** - Concerned about the difference in entered data rate vs resulting data rate.
- **FIXED** - Crash on Export: Assertion failure shows

- **FIXED** - Curve Type Actions do not match Text Easing Options
- **FIXED** - Duplicate ScreenFlow project with an MP3 file, the audio in the duplicate file cannot be heard
- **FIXED** - Error Opening File: The error message was "Error Domain=Scarlett Code=-1 "Failed to open scc file" UserInfo=... {NSLocalizedString=Failed to open scc file}"
- **FIXED** - Error: The document could not be saved/autosaved no such file or directory
- **FIXED** - Exporting project while Text Box or Annotation is highlighted/selected will export asset as being highlighted
- **FIXED** - Files can be added to Media Library multiple times when using "+" drop-down menu
- **FIXED** - German keyboard shortcuts
- **FIXED** - Imported media file displays border after Brightness adjustment
- **FIXED** - Invalid credentials are not rejected when logging into Telestream Cloud
- **FIXED** - iOS back camera video is imported upside down
- **FIXED** - Localized versions of ScreenFlow cannot access user guide through help menu in app
- **FIXED** - Manual entry of numerical value kills keyboard playback shortcut
- **FIXED** - Manually entering a Show Keystrokes Width value while localized in French throws a Runtime Error
- **FIXED** - MASScreenFlow is not writing to the designated Scratch Disk Folder
- **FIXED** - Media Library is scrolled down by default
- **FIXED** - Nudge Clip shortcut is functioning incorrectly
- **FIXED** - Odd error message for Touch Callout Opacity
- **FIXED** - On-Canvas rotate is undone incrementally
- **FIXED** - Pressing the escape key on the Recording Complete window causes the recording to be discarded
- **FIXED** - Properties changes are not undone correctly after a snapback action
- **FIXED** - Protected Icon does not show on locked iTunes Files
- **FIXED** - Publish to Vimeo data rate too low
- **FIXED** - Publish to Youtube limited to 60-character title - Now 100 character limit
- **FIXED** - Record iOS Device option unchecks itself
- **FIXED** - Saving and working with projects on a DropBox saved folder causes project corruption
- **FIXED** - Scale Animation plays upside down if Start Scale option is set to a negative number
- **FIXED** - ScreenFlow 6.2 crashing unexpectedly and cycling while editing

- **FIXED** - ScreenFlow does not display a progress meter after duplicating a project, making it appear unresponsive

- **FIXED** - ScreenFlow does not support the Photos directory structure
- **FIXED** - ScreenFlow hangs for a long time when opening or editing a certain project
- **FIXED** - Scrollbars show when zooming in/out while viewing media in Preview
- **FIXED** - Searching within Media Library does not work when dragging file to timeline or canvas
- **FIXED** - Show Captions does not update by just clicking the option
- **FIXED** - Some exported ProRes content goes over Max File Size
- **FIXED** - Some Keyboard shortcuts for Localized keyboard layouts not working
- **FIXED** - Splitting and moving clips with different PAN settings causes PAN settings to change
- **FIXED** - Splitting certain audio clips then undoing the split causes Runtime Error
- **FIXED** - Text Animation SCALE - Fade Characters ON/OFF = same result
- **FIXED** - Text clips not editable and freeze frame not visible in preview
- **FIXED** - The Thumbnail Preview within the media library does not show for IOS devices
- **FIXED** - Timeline performance regression with waveforms in 6.0
- **FIXED** - Timeline seconds not showing after 1-minute mark
- **FIXED** - Typing in textbox produces Debugger Warning
- **FIXED** - Unable to export at 100% a 5k iMac recording
- **FIXED** - Update Google OAuth to version 2
- **FIXED** - ViewBridge Assertion failure shows on 10.12 OSX on new OLED Laptops
- **FIXED** - Corner Round Applied to Text - Corner Values change based on zoom level
- **FIXED** - Video actions and Video Motion actions are created incorrectly when added to a clip after a Video Motion action
- **FIXED** - Video motion settings do not have a max or min setting
- **FIXED** - Track visibility functions incorrectly when a track is moved with a clip present on the track
- **FIXED** - Recording Monitor timer continues to count when recording is paused
- **FIXED** - Publishing to YouTube with captions track enabled results in 'Error 410'

Version 7.0 contains hundreds of bug fixes, not all of which are listed here. There are also additional user interface/user experience enhancements, and vast improvements to the general stability and performance of the application, that are not able to be listed here.
